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CONSTANT IRRIGATION IN CHRONIC CYSTITIS.¹

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It is well known that in cystitis, sooner or later, the products of inflammation are liable to decompose in the bladder, and that, as a consequence, the urine becomes ammoniacal and, in turn, by its irritating properties, increases the inflammation.

The most important question in connection with treatment is, How shall this vicious circle be broken? In some cases, where the cause is no longer acting, success in this direction is followed by recovery; and in others, dependent upon causes which cannot be removed, great relief is obtained.

The difficulty of meeting the question is sufficiently shown by the means adopted for keeping the bladder empty, such as dilatation of the urethra and vaginal cystotomy in women, and perineal cystotomy in men. It is certainly desirable that the same end should be reached by simpler means, which would secure the complete removal of the products of inflammation, as well as the urine itself, before either had time to undergo decomposition. The latter takes place so rapidly that intermittent irrigation, so long in use, often proves ineffectual. It therefore seemed desirable to try the effect of a constant current of warm water through the bladder. The following two cases show the results obtained. Though not so complete as could be wished, the examination of the urine still showing some of the products of inflammation of the bladder, and though the trouble may return, the patients were made so comfortable as to justify the publication of the cases, in order that a knowledge of the results might secure a more extensive trial by others, and establish the value of the proceeding much sooner than it could otherwise be done.

CASE I. On October 6, 1876, a woman, twenty-four years old, who had been employed as a cook, entered the Massachusetts General Hospital. Although she had been married more than six years she had never been pregnant, but had been well except for the dysuria on account of which she entered. This began six years before, being pre-

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ceded by nearly constant dull pain in the back, also at times in both iliac regions and in the hips, always worst at night.

About two months after the pain began micturition became frequent and painful, and so continued. She was always obliged to pass urine from two to four times in the night, and had a burning pain during micturition. Finally, the burning sensation became nearly constant. It seemed to be in the neck of the bladder, and was worst just after micturition, which was sometimes attended by straining. During the past two or three months she had often passed gravel, the pieces sometimes being as large as a bean. The menses had always been regular, lasted from three to four days, and were not particularly painful, though the trouble with micturition was generally worse at this time. There had been much headache for some years. At times within two months the feet had been so much swollen as to prevent her putting on her boots. Any unusual exercise caused palpitation and dyspnoea.

She had done no work since June, 1876. The appetite was poor, and she had lost flesh for a year and a half. The bowels were regular. Sleep was disturbed by pain and the necessity of rising to pass urine.

She entered the hospital under the care of Dr. G. G. Tarbell, who reported no distention of abdomen, but marked tenderness on pressure or percussion over the region of the bladder. Uterus high in the pelvis; apparently normal, with the exception of slight ulceration about the os; not tender on pressure, though pressure on bladder caused great pain. There was a peculiar purplish appearance of the os and surrounding vaginal wall. Carbolic acid and glycerine were applied to the os, and the bladder was syringed twice daily with a solution of carbolic acid, one part to one hundred and twenty.

At this time the *urine* was turbid and *alkaline*; specific gravity 1019; albumen one per cent.; sediment abundant. An examination with the microscope showed pus, blood, bladder epithelium, and crystals of triple phosphate. A week after, October 15th, it was reported that the introduction of the catheter, as well as the injected fluid, caused much pain, but the latter was followed by a sense of relief which lasted two or three hours. The water injected came away bloody, and contained coagula, which clogged the catheter so much as to require removal frequently. Micturition was still frequent.

It was directed that the bladder should be washed out with flaxseed tea three times a day. The urine at this time was high colored, slightly *alkaline*, specific gravity 1020, albumen two per cent. There was a heavy deposit of pus and blood, and in addition to this the microscope showed degenerated bladder epithelium and crystals of triple phosphate.

October 22d. Micturition was as frequent as before, but there was less tenderness of the bladder on pressure above pubes and by the vagina. There was also much less blood in the water after syringing.

On October 29th the urine drawn before syringing was clear at first, then contained clots, and then was free from blood. The water used in syringing was sometimes tinged with blood, but more frequently was clear.

On November 2d the patient came under my care, and injections with the same solution of carbolic acid were ordered to be given every half hour during the day, the double catheter being allowed to remain. These injections were made by means of a bottle suspended at the head of the bed, perhaps eighteen inches above the level of the pelvis, but the height was regulated so that the pressure did not cause pain.

On November 3d the report was that irrigation had been used from two till nine P. M. The water which escaped was always tinged with blood, and a few small coagula were seen.

On November 4th the catheter had been well borne, though kept in the bladder from 7.30 A. M. till 8.30 P. M. She had been obliged to pass urine but twice during the preceding night. The water which escaped was much clearer than when irrigation was first used. The urine which passed this morning after the night's rest contained comparatively few coagula, and was much clearer.

On November 5th the water which escaped from the bladder had still a reddish tinge, but only a few small clots were seen.

On November 6th the injecting fluid which escaped was quite clear, but the urine which collected during the night was dark colored and contained much sediment. It was turbid and still alkaline; specific gravity 1021; albumen one and one half per cent.; sediment very abundant, largely blood. The microscope still showed pus, blood, bladder epithelium, and crystals of triple phosphate.

On November 8th the urine passed the night before was much clearer, and there was less deposit.

From the 8th to the 17th the urine presented about the same appearance, and the patient was comfortable.

On the 19th the catheter was left out, and there was some increase of pain the morning following.

On the 22d, as there was some irritation and blood had reappeared, the catheter was again left out. She continued, however, to complain of pain in the back and hypogastrium, and the catheter was reintroduced on the following day, with relief. During the week preceding the 24th she had more or less loss of appetite, and nausea, and vomited once or twice.

On the 27th the urine was darker colored and contained a few clots.

On the 29th the appetite was good, and she felt better than for two weeks.

On November 30th constant irrigation day and night was ordered.

On December 3d the carbolic acid was omitted, and water of about

the temperature of the body was substituted. On the night of the 4th the catheter was omitted, in order that the condition of the morning urine might be ascertained. The latter, on the morning of the 5th, had the normal color. The sediment was moderate in amount and less dense.

On the 12th it was turbid, of normal yellow color, *acid*, specific gravity 1020; albumen one fourth per cent. Sediment moderate, but still containing pus and bladder epithelium.

On the 15th the catheter was omitted at two P. M., and was not introduced again until the following morning. She was obliged to rise but once during the night to pass urine. The catheter was again omitted at the same hour on the 17th. An examination of the urine on the morning of the 18th showed that it was still acid; there was only a trace of albumen. The sediment consisted of a light cloud, containing pus and bladder epithelium, less marked than before.

On the 19th, after a similar omission of the catheter, the sediment occupied only about an inch in the glass (about eight ounces), and was simply a light cloud, as before.

On the 22d irrigation was omitted from nine A. M. until 7.30 A. M. on the following day. During this time she was up, and perfectly comfortable. She stated she had not had so comfortable a day for six years. She had been obliged to rise once in the night, but the irritation was less than formerly. The urine was about the same as on the 10th.

On November 23d irrigation was omitted twenty-four hours. She was perfectly comfortable, passed urine but once in the night, of about the same character as before.

After free irrigation with a solution of carbolic acid (one part to one hundred and twenty), on the afternoon of the 24th the catheter was withdrawn.

On the 26th she reported that she had been obliged to pass urine but twice during the day and once at night, but its passage was accompanied by some irritation. The urine of this date showed twice as much sediment, of the same character as before.

On the 29th it was still acid; specific gravity 1018; albumen one fourth per cent. The sediment was half an inch in depth, but was very dense, and pus was quite abundant.

On the 30th she felt as well as before, though the urine still contained the increased amount of pus as the previous examination.

On the 31st, as she had had some pain in the region of the bladder, irrigation was recommenced.

The pain persisted until the morning of the 4th of January, when the urine was acid; specific gravity 1019; albumen one fourth per cent. The sediment was dense and half an inch in depth, and contained much pus.

On January 9th, after omitting the catheter twenty-four hours, the urine appeared the same as on the 4th, but on the 11th the sediment was less than ever before, and appeared in the form of a light cloud half an inch deep. On this day the patient left the hospital, feeling perfectly well.

CASE II. A married woman, thirty-two years old, a native of Ireland, entered the hospital on December 4, 1876. She had had three children, the last two years before. After the birth of this child, and taking cold, she thinks, she began to have frequent and painful micturition, and to pass blood with the urine. No pain at other times. No fever. These symptoms continued, though at the time of entering she passed less blood than before. She was obliged to get up two or three times in the night, and there was constant soreness about the meatus. Though never confined to the bed, she had lost some flesh and strength. Appetite fair. Bowels regular. Complained of sharp, cutting pain, which obliged her to empty the bladder frequently, though the pain was worse during and after the passage of urine. She could at times resist the inclination, and the pain would pass off, but at other times the urine would escape involuntarily. She had also passed a substance resembling mortar, which occasionally would cause temporary obstruction.

The mucous membrane about the meatus was somewhat swollen, but the catheter passed without pain.

Urine yellow and turbid; specific gravity 1025; *alkaline*; albumen one per cent. Sediment abundant, consisting of pus, blood, bladder epithelium, and crystals of triple phosphate.

On December 10th constant irrigation with the double catheter was begun, as in the preceding case, and was continued twelve hours daily for three days. She suffered only from the introduction of the catheter, but the urine escaped at times around it. She had forcing pains when standing erect. On the 12th a small fragment of mortar-like material was found in the catheter.

An examination of the urine on the morning of the 13th, after the catheter had been omitted twelve hours, showed the color to be normal; specific gravity 1024; *alkaline*; albumen one half per cent. Sediment much less than before, containing mucus, pus, blood, and crystals of triple phosphate.

On December 16th the patient was seen by Dr. Minot in consultation, and the bladder was explored, but no calculus was found.

Irrigation was then resumed, and continued without intermission during the twenty-four hours. She bore the catheter well, and there was less escape of urine around it.

On the 22d, after omitting the catheter during the night, the urine was found to be of a normal yellow color, cloudy, and *acid*; specific gravity 1024; a marked trace of albumen. The sediment was much

less dense than before, and contained pus, a few blood corpuscles, and bladder epithelium.

The nurse reported more clots on the previous day than before. The patient was obliged to rise twice in the night to pass urine, but had no pain.

On the 26th, the catheter having been omitted twenty-four hours, it was reported that the urine had been passed but once during the day and once in the night. It was cloudy, *acid*; specific gravity 1023; only a trace of albumen. There was but little sediment which contained a few corpuscles and bladder epithelium.

On the 28th the irrigation was again omitted twenty-four hours; the patient was up and about, and passed urine but three times, its passage causing some irritation.

On January 12th the catheter was withdrawn, and was not introduced again.

On the 14th the dribbling noticed on the 7th, after the temporary removal of the instrument, had ceased, and there was no irritation in the neighborhood of the bladder, but there was some pain in the back, and she was obliged to pass urine three times during the night and twice during the day.

Between December 28th and January 15th the urine was examined several times, the variations being in the amount rather than in the character of the sediment.

On January 15th the urine was cloudy, *acid*; specific gravity 1019; a trace of albumen. Less sediment than ever before, containing a few scattered pus corpuscles.

She was about the ward, and the urine continued about the same until she was discharged, January 23d. On February 6th the patient wrote that she had been comfortable since returning home, with the exception of pain in the "small of the back."

It will be noticed that the urine in both cases was alkaline until the irrigation was constant, that it soon after became acid, and so continued while the patients were under observation. While pus was still formed the blood disappeared, and none was found in either case for some time before the patient left the hospital. The time necessary for the change from alkaline to acid may be much shorter than is shown here, but a number of cases are necessary for a complete demonstration. The partial irrigation at first employed may have been instrumental in bringing about the result, but much of the time spent in this way was probably lost. Through fear of interrupting the continued irrigation too soon it may have been continued unnecessarily long before testing the urine. But when the latter was found to be acid it was too late to ascertain *how soon* it became so. We only know that it was so in six days. Other cases are needed in which the urine can be tested in five, four, three, and two days after the commencement of constant irrigation.

In regard to the apparatus, nothing more is needed than a vessel to hold the water, a double catheter, and sufficient india-rubber tubing to convey the water to and from the bladder. The flow may be regulated either by a stop-cock attached to the reservoir, or by some compression of the tube. The position of the vessel should be such as not to cause pain by excessive pressure, but it is desirable that the bladder should be fully distended at times, in order that the whole surface may be thoroughly cleansed. Patients may learn to do this by simply compressing the efferent tube from time to time. The quantity of water needed is about a barrel in the twenty-four hours.

ERYTHROXYLON COCA.

BY G. ARCHIE STOCKWELL, M. D.

COCA is the dried leaf of the shrub *Erythroxyton coca* or *Erythroxyton Peruvianum*; order, trigynia; class, decandria; habitation, mountainous districts of Peru and Bolivia, two thousand feet and upwards above the level of the sea.

To the native Peruvian and Bolivian coca holds the same relation as the betel-nut to the Malay, the tea-plant to the Celestial, poppy and Indian hemp to the Oriental, and tobacco to the Caucasian. To it he is as much the slave as were Dr. Johnson and Gilbert Stuart to rappee. Beyond the confines of the country to which it is native but little seems to be known of coca; nevertheless it is, without doubt, one of the most remarkable products of the torrid zone. When we consider its peculiar properties, it is astonishing that it has so long remained unnoticed. Were it a product of the jungles of interior Africa, or extremely difficult to obtain, this neglect could be accounted for; on the contrary, hundreds of European and North American vessels annually frequent the harbors of Peru and Bolivia, or the metropolis of the Amazon, where it may be obtained in large quantities, and where it has been as long known as the cinchona; yet the tonic, stimulating, and narcotic properties of this shrub are just beginning to attract the attention of the medical world.

Like the cinchona, the peculiar powers of coca have been introduced to the notice of the Caucasian by the aboriginal inhabitants of the country to which it is indigenous. No historical record informs us when it was introduced to their notice, or who first discovered the hidden properties of its leaves. When the empire of Atahualpa was overthrown by the rapacious Pizarro, coca was as well known to the Peruvians as at the present day, and played an important part in their religion, being used in all public ceremonies as an offering to the sun god.

Although found in a wild state, like most other shrubs it is enhanced

in value by cultivation, and hence none but the carefully nurtured, domesticated variety finds its way to market. The sultry valleys of the eastern slopes of the Andes are most favorable to its growth, and it is here that a most systematic method of cultivation is adopted, the plant being raised from the seed. When the young shoots have attained a height of about fifteen inches they are transplanted in rows a foot or more apart; when full grown they rarely exceed sixty-four or seventy inches in height. As it thrives best in damp situations, sheltered from the sun, it is customary, when such localities are not available, to plant maize between the rows because of its rapid growth, its leaves soon furnishing the required shelter. Certain species of palms are used for the same purpose. If no rain falls, the shrublets are subjected to copious and repeated drenchings. Like the coffee-tree, coca has a lustrous green foliage with white blossoms, which ripen into small red, or rather scarlet berries. When the shrub has attained an age of eighteen or twenty months the foliage is stripped for the first time, the leaves now presenting an appearance not unlike those of the tea-plant, being oval, pointed, and two or two and a half inches in length, with half that breadth at the widest part, and furnished with short, delicate footstalks; unlike those of the tea shrub, they are not dentate, and may be readily distinguished by a curved line running from base to apex upon either side of the midrib. The foliage is known to be ripe for plucking when the leaves become sufficiently brittle to break upon bending. After stripping, the leaves are spread out to dry upon woolen blankets in the sun, great care being taken to prevent absorption of moisture, which is known by the leaf acquiring a brown tinge; when properly cured it retains a pale-green color. When the curing is completed the coca is packed in bundles or sacks of an *arroba* (twenty-five pounds) each, and carefully covered with dry sand until desired for the market.

The naked shrub soon produces a new foliage, which in turn is ready for plucking in three or four months; so that in favorable situations three or four crops are gathered each year from the same shrub, but in the higher altitudes the planter must be content with a single crop. With proper care the shrub is productive for forty or fifty years without the *cocales*, as the plantations are designated, being renewed. The only enemies of the plants are the ants and moisture. The former are much more troublesome pests than with us, and speedily destroy a plantation, while the latter either entirely spoils the dried leaf or renders it of inferior quality. When well dried the leaves possess an agreeable odor, with a slightly bitter aromatic flavor, closely allied in taste to inferior green tea.

Although there is little or no foreign demand for the article, the local consumption is immense. Not only do the Indians of Peru and Bolivia esteem its use as one of the prime necessities, but it plays a most im-

portant part in the economy of life with a goodly portion of the white population, and also of the choloes, mezitoees, and negroes, who are never seen without the leathern pouch in which to carry the leaves, and the attendant gourd holding powdered unslaked lime, the sharp ashes of the quinoa, molle-tree, or those of the plantain. Three times a day at least will the *coquero* suspend all labor to indulge in his favorite luxury. Taking a few leaves from his pouch, he removes the midrib, and carefully masticates them into the shape of a small ball which is known as the *acullico*; then, withdrawing the wooden stopper of the gourd, he conveys to his mouth by means of a sharpened stick a small portion of the alkali, and repeatedly stabs the *acullico* until the desired flavor is obtained, at the same time avoiding all contact with his lips; when the two are thoroughly incorporated, the *coquero* lies upon his back with half-closed eyes and gives himself up to the full enjoyment of rumination for about forty minutes. So accurately is this time observed that the Indians, when traveling, measure distance by it, one *cocceada* being about equal to the time occupied in walking two English miles.

It is a remarkable fact that those who regularly use the coca require but little food, and with increased indulgence are enabled to undergo the greatest fatigues without tasting anything else. Pöppig ascribes this astonishing increase of endurance to a temporary excitement, which must necessarily be succeeded by a corresponding collapse, and therefore asserts that the use of coca is highly injurious. This is in accordance with the exploded attempt to apply the dynamic law that "action and reaction are equal and opposite" to the phenomena of stimulation. Those who are ignorant of the physiological action of stimulant narcotics repeatedly affirm that tobacco, opium, hemp, alcohol, coca, and kindred drugs which are used as stimulants produce a corresponding recoil, whereas the so-called recoil is simply the advent of narcosis, owing to a large impregnation of the blood with the agent after stimulation from a small dose. Coca never produces a depressing action, except as the result of an overdose or of small quantities so frequently repeated as to cause the narcotic effect by accumulation. Careful observations lead me to believe that, so far from being injurious, the moderate consumption of coca is not only wholesome but frequently beneficial. Tschudi cites as examples several Indians who, never allowing a day to pass without at least three *cocceadas*, attained the truly patriarchal age of one hundred and thirty years. As the ordinary food of the native Peruvian consists almost exclusively of roasted maize, barley, or seeds of the quinoa, which are eaten without any addition, they suffer with frequent and obstinate obstructions and derangements of the digestive system, which are entirely obviated by the use of coca. From the time the native becomes a *coquero* these troubles cease, never to recur, except with the abandonment of the habit.

Travelers in the Andes have found in coca a preventive of those asthmatic symptoms that are produced by the rarefied air of high altitudes. Tschudi invariably drank a strong infusion before undertaking his hunting excursions in the Puna, fourteen thousand feet above the sea level, and not only found it to afford great relief, but asserts that he suffered no greater difficulty in breathing while in the rapid pursuit of game than would have been the case upon the coast.

Although the moderate use of coca is thus beneficial, its abuse is attended with serious results, and if persisted in the digestive functions are deranged, and there is brought about a structural degeneration of nerve material, the consequences of which are to be seen in delirium, brain softening, and general paralysis. The permanent pathological effect induced does not allow of as ready an impression by the drug as before; hence the coquero continually demands more and more of his accustomed narcotic to produce the desired effect. Such a man may be readily distinguished by his trembling limbs and hollow cheeks, his sunken, lustreless, black-rimmed eyes, sallow complexion, incoherent speech, and stolid apathy; seemingly oblivious to all surroundings, he neither notices a friend nor fears a foe. His character is irresolute, suspicious, and false; in the prime of life he has all the appearance of senility, and in later years he sinks into complete idiocy. With the confirmed coquero no increase of temperature or acceleration of the circulation is induced by the use of the drug; on the contrary, the heart's action is slow and intermittent, and the pulse thin and thread-like. The forehead is frequently clammy and cold, while the extremities may be at a fever heat. The symptoms point strongly to the medulla oblongata as the part affected, which undoubtedly becomes partially paralyzed. In moderate doses, coca causes increased arterial action, stimulates the alimentary secretions and peristaltic action, diminishes weariness, strengthens the pulse, calms nervous excitement, retards waste, facilitates repair, alleviates spasms, and increases mental activity; in fact, it is an economizer of vital energy and an effective aid to nutrition. It invariably contributes to mental cheerfulness, and withal not unfrequently causes unequivocal aphrodisia. Although one cannot look upon coca as a food, it will be found second only to alcohol in its food-replacing power; for this reason it will undoubtedly prove of value in low forms of fever. In larger doses it has a decided action upon the kidneys, producing also watery stools, and, when long continued, gives to both urine and feces a highly offensive odor, and renders the latter so acrid as almost instantaneously to destroy all vegetation with which they may come in contact; it also renders other excretions, as those of the lungs and skin, offensive. In these large doses it does not seem to affect the visual organs, as the pupils will be found freely contractile on the approach of light, and unless the doses are very heavy the eye presents an ex-

pression of combined merriment and cunning. Hunger seems never to be induced, but rather the contrary; yet if the patient be coaxed to partake of food set before him he eats voraciously.

According to one writer, loosened teeth with foul, ulcerous gums are among the effects of prolonged coquerism, and he cites as instances the Indians employed in certain of the mines of Peru, who, he discovered, not only consumed enormous quantities of coca, but "were afflicted with ulcerous gums, foul breath, and loosened teeth, the sufferings from which could only be allayed by death." The writer in question must have been woefully ignorant, or he has wantonly endeavored to mislead his readers, as the mines in question were the famous quicksilver workings of Peru. He speaks of them as silver, but ignores the fact that it was not argentiferous metal that was obtained, but mercury.

Of the physiological and therapeutical action of coca there is much to be discovered. It has been lauded as a hypnotic, yet its uncertainty of action will prevent its ever superseding the many other drugs of far greater value that we possess. It is, however, both anodyne and antispasmodic, exerting special influence upon the brain and spinal cord, and from its action upon the pneumogastric it will undoubtedly prove of benefit in certain forms of asthma. Its antispasmodic action has been vouched for by numerous South Americans. It is used by the natives to promote uterine contraction. Where inertia has supervened, I am told by Spanish American physicians that its effect is both speedy and certain. In melancholia, or where nervous depression exists, its action in promoting cheerfulness is marked, and its influence upon the digestive function, before noticed, will doubtless cause coca to be prescribed for many of the diseases of so-called dyspeptic character and those irregularities arising from non-assimilation of food.

It is said that certain of the Bolivian Indians inherit from their ancestors a mode of preparing and administering this drug so as to produce a cataleptic state so profound as to simulate death beyond detection, from which the patient may be aroused after the lapse of a few hours without serious results. I believe a mixture of *cannabis indica*, opium, and certain other narcotics is used for the same purpose by the initiated among Orientals.

Coca will produce sleep oftentimes when opium has failed if given in repeated small doses for a little time before retiring to rest, in order to allow the preliminary stage of excitement to pass off; but, as a rule, it is inferior to the opiates, its action being extremely variable.

For the last few years it has been fashionable to claim for every new drug a decided antiperiodic action, vaunting for it all the powers of quinia, and coca has not escaped. A careful and thorough experimentation with the drug will, however, convince the most incredulous that it possesses no antiperiodic properties. Administered in conjunction

with quinia it will, I doubt not, like opium, oftentimes prove a valuable adjunct. Give quinine to a confirmed coquero, at the same time depriving him of his solace, and you will frequently be disappointed in its results. Restore him his coca, and the action of the salt will be both speedy and certain. I have observed like results when prescribing for consumers of tobacco.

From the action of coca as observed, the writer would give it to a patient suffering from cholera with the expectation of happy results; its action is rapid, and vomiting and cramps would, I think, speedily yield to its influence. Larabie, Williams, and other travelers have experienced almost instantaneous relief from coca when suffering from cholera morbus. Dr. Carvallo informs me that he has observed similar results from an infusion, and has known even the chewing of the leaf to act favorably. I have witnessed the same effects myself. It would not be at all surprising if it were proven that the coca caused a marked increase of the biliary secretions. I should also expect marked results from it in congestive chills, particularly with flannels wet with ammonia spirits in which quinine had been dissolved to saturation, applied to the abdomen, as practiced in Central America. But it is in hypochondriacal diseases that we may look for the greatest benefit from coca.

I trust that the profession will thoroughly examine into the merits and demerits of the article, and give the full negative results of their investigations. I say *negative*, for that is the evidence demanded at the present day. We are overrun with positive evidence, all virtues being ascribed to all remedies to such an extent that we become lost in seeking information. What we now need to know is what medicines will *not* do.

It will probably be found that the dose required for our climate will be much larger than that demanded in Peru. The best mode of administering is in the form of an infusion, the dose being about two drachms. The greatest drawback to its use is the liability to gather moisture, which renders it worthless. The fluid extract I would have but little faith in, for obvious reasons. If an extract be made of erythroxyton coca one pound, rectified spirit four pints, prepared by maceration for seven days, pressing out the tincture and evaporating to a proper consistence, I think it would be satisfactory. The dose of such an extract should be one fourth of a grain to two grains or more.

A NEW SYRINGE PISTON.

BY SAMUEL PETERS, M. D., AND F. S. PETERS, M. D., COHUES, N. Y.

A GREAT fault in hypodermic syringes as hitherto constructed is the rapid drying of the piston. As soon as the oil with which it is saturated when manufactured is removed by use, it dries so quickly that a

day or two is often sufficient to render the instrument unfit for use until the piston is removed, remoistened, and manipulated so that it will again fill accurately the syringe barrel.

Those who use the syringe daily or several times a day of course do not experience this difficulty. Even when the chamber above the piston is filled with water, as has been recommended very properly, the process of leaking and evaporation goes rapidly on, no provision being made for its prevention. At our suggestion, Messrs. Tiemann & Co., of New York city, have constructed a syringe with a reservoir for water or oil in the piston-rod and piston, with openings adjacent to, or rather under the leather constituting the piston, so that by capillary action the desired and necessary moisture is always and readily maintained. The piston-rod is made tubular and slightly larger, and fitted above with a screw-cap that effectually prevents evaporation; hence all the moistening material must be consumed in performing the work of saving the physician's time and temper, and permitting the speedy application of the remedy which he is generally in haste to administer. It may not be improper to state here that essentially the same thing, with additional advantages, has been accomplished by the same parties in a new syringe which carries the medicated solution always ready in the barrel above the piston, with a simple arrangement for transferring any desired number of minims below the piston ready for injecting. This is done in a single moment, and no time is consumed in drawing from a vial.

A cut and description of this last-mentioned instrument will be published shortly.

RECENT PROGRESS IN PATHOLOGY AND PATHOLOGICAL ANATOMY.

BY R. H. FITZ, M. D.

PATHOLOGY.

Causes of Dropsy. — Cohnheim and Lichtheim¹ have undertaken a series of experiments for the purpose of determining the relation of dropsy to a watery condition of the blood.

According to Bright, the essential cause of dropsy in diseases of the kidney was a watery condition of the blood, hydræmia, due to the loss of albumen through the kidneys. This statement was apparently corroborated by Magendie's experiment, the production of dropsy by the introduction of water into the veins. Later this view became necessarily modified by the observations of extreme dropsy coming on rapidly after scarlet fever, when but little urine and albumen were excreted; further, by the slight dropsy, or even by its absence, in chronic inter-

¹ Virchow's Archiv, 1877, lxxix. 106.

stitial nephritis, notwithstanding a loss of albumen extending over a period of years. Recent experiments have shown also that œdema does not necessarily follow a watery condition of the blood.

The essential element in the production of the dropsy was then thought to be an absolute increase of the water in the blood, a hydræmic plethora, as distinguished from the relative increase of the watery part of the blood, the hydræmia, though the latter factor might also be of weight. This hydræmic plethora was considered to result from the accumulation of water in the blood, owing to the hindrance offered in the kidneys to its elimination, and this view seemed still more strongly supported than the theory of Bright by the experiment of Magendie. This view is also open to criticism, as a total suppression of urine may exist for several days without dropsy resulting, and in hysterical patients a scanty flow of urine may last for months without any dropsy supervening. Even Magendie's experiment offers no proof on account of the complications produced by the destruction of the red blood corpuscles with the water used.

The writers have repeated this experiment with the precautions suggested by modern investigations, and have introduced into the circulating blood of a series of animals, dogs and rabbits in particular, a six tenths per cent. solution of salt. In certain instances death followed rapidly from acute œdema of the lungs; in most cases, however, death was more gradual from insufficient decarbonization of the blood and cardiac paralysis; œdema of the skin, the first and most important sign of the so-called hydræmic œdema, did not occur, hence hydræmic œdema is not dependent upon hydræmic plethora.

The immediate effect of the introduction of the fluid was evidently a diminution in the soluble constituents of the serum, and this was found to be much greater than occurs in diseases of the kidney. Permanent alterations in the blood pressure did not occur, an observation previously noted by Worm Müller and explained by him as probably due to a stretching of the elastic walls of the vessels beyond their power of retraction. The rapidity of the blood current was decidedly increased. The most striking result of the experiments was the separation of water from the blood by the glands and as a transudation into the tissues. The urine, saliva, tears, bile, gastric and intestinal fluids were increased. The transudation into the tissues was determined in part by the rapidity of the lymph current and in part by the presence of œdema, the latter being likely to arise where the fluid was transuded from the blood vessels more rapidly than it could be carried away through the lymphatics. It was found that the hydræmic plethora produced an enormous acceleration of the flow of lymph through the thoracic duct, a decided increase in the flow through the cervical lymphatics, while in those of the extremities, the current was not even hastened. It became

thus evident that the hydræmic plethora produced almost exclusively an increase in the lymph coming from the viscera, while that from the skin and muscles was but little affected.

The relative increase of the water in the blood, hydræmia, producing in man a cutaneous dropsy, the hydræmic plethora or absolute increase of this water also produced an œdema but not of the subcutaneous cellular tissue. When a sufficient amount of the salt solution had been introduced, ascites appeared, also œdema of the gastro-intestinal mucous membrane and of the sub-mucous tissue of the mesenteric lymph gland, of the pancreas, kidneys, liver and gall bladder, and of the retro-peritoneal fibrous tissue. The submaxillary and sublingual salivary glands; the cervical lymphatic glands and fibrous tissue became œdematous, also the conjunctivæ and lachrymal glands. There was but little œdema of the thoracic cavities, and their contents and all the other organs, including the central nervous system, were free from œdema.

There is thus no correspondence between the primary localization of the œdema taking place in renal disease and that resulting from hydræmic plethora.

The constancy of the occurrence of the dropsy in the manner stated suggested that a common cause might be found in the function of these parts, to relieve the body of water. It was apparent that this œdema did not result from the mere dilution of the blood, but was mainly dependent upon the increase in the absolute amount of water in the blood. This may be considered as favoring the idea that the œdema was localized in consequence of the function of the parts. The vessels in such parts must normally be under different relations from those elsewhere in the body, from the fact that they are called upon to furnish the fluid necessary for the secretion from these parts.

It was not thought probable that the œdema of the skin in renal disease was an equivalent of the œdema produced in the experiments, dependent upon the function of the sweat glands, as the latter did not react by an increased secretion, as was the case with the abdominal viscera. Neither the hydræmic plethora nor the hydræmia as such were found to be sufficient to explain the origin of the œdema. It was only in certain vascular territories, the function of the wall being undisturbed, that transudation took place, when the volume of the circulating fluid was increased, while in most of the vessels no such reaction took place. It seems probable, however, that an œdema may occur when the vessel-walls are altered; particularly when the alterations are such as to produce a greater transmissibility in the wall. In those cases where the vessel-walls are altered and there is no transudation, the experiments showed that the latter occurs, and an existing œdema becomes increased when the blood is diluted. These considerations suggest that in man

the direct cause of the hydræmic œdema is to be found in an alteration of the vessels, particularly in those of the skin. This alteration of the vessels alone may not be sufficient under certain circumstances, but the hydræmia or hydræmic plethora may then be also required. At all events the extent of the œdema is likely to be dependent upon the degree of the latter factors.

The changeable character of the œdema in renal disease might seem opposed to this view, but apart from the disturbed function of the vessel-wall, the hydræmia and the hydræmic plethora, other factors are likely to favor the occurrence of the œdema. Such are slight venous congestions, especially those due to gravity, which are changeable according to the movements of the individual. Another changeable factor may be found in the varying congestions of certain vascular regions due to vaso-motor influence, which of themselves are not sufficient to produce an œdema.

If alteration of the cutaneous vessels plays so important a part in the production of the dropsy in renal disease, it is important to consider whether there may be any connection between diseases of the kidney and disturbances of the vessels in the skin. Such a connection is suggested by the probable inflammation of the skin in scarlet fever, often associated with disease of the kidney. The skin affection alone rarely produces an œdema, though exceptionally the alterations of the cutaneous vessels suffice to produce œdema of the skin without there being renal disease. The anasarca is very generally and rapidly brought about, however, when the renal secretion is disturbed and hydræmic plethora arises in consequence of the disease of the kidney. A relation between affections of the skin and those of the kidney is further suggested by the experiments of Koloman Müller determining the influence of the condition of the cutaneous vessels upon the urinary secretion, and by the frequently maintained origin of renal disease from taking cold. More direct evidence is furnished by the effect upon the kidneys of extensive burns of the skin and of varnishing its surface. A relation between injuries to the vessels of the skin and affections of the kidney is thus not impossible, but such does not apply to the pure hydræmic œdema met with in phthisical, cancerous, and other cachectic individuals. In these cases and also in a series of chronic renal diseases a long continued hydræmia undoubtedly affects the vessel-walls. The normal function of the latter is dependent upon the continuance of a normal circulation. When this is interrupted, even for a short time only, the wall suffers severely. Oxygen and the other constituents of the blood are doubtless necessary for the persistence of the normal function of the vessels. If the blood loses its solid constituents to a marked degree the vessel walls become injured slowly but surely, and then only does the œdema arise as the result of the hydræmia.

The writers close this article by reminding its readers that the views presented are not to be regarded as proven, but are offered as an explanation of appearances hitherto insufficiently understood.

Air Embolism. — Under the direction of Vulpian, Couty¹ made a series of experiments to determine the effect of the admission of air into veins, and describes the symptoms occurring in surgical cases. The heart was so prepared that its relation, before and after the entrance of air, could be observed. According to the writer the air on entering the vein did not go beyond the vertebral arteries, therefore the direct disturbance of the brain could not be the cause of death. The right side of the heart was not paralyzed, but its contractions were rather increased until the respiratory and muscular activity were lost, when it became quiet. The stoppage of the pulmonary circulation was not dependent upon air embolism of the pulmonary arteries, nor was it found that the main branches of the pulmonary artery contained air. A diminution, not an absolute cessation of the aortic current, occurred. It was considered that the pulmonary circulation was stopped by a disturbance of the heart's action. The air entering the heart remained in the right ventricle, which became doubled and trebled in size. The normal contraction being thus suspended, the foamy fluid was driven backwards through the open valves into the veins. This regurgitation continued in the fatal cases to the time of death, a diminution in the aortic contents being the result. The process was divided into four stages. (1.) A diminution in the aortic contents and in its tension with acceleration of the heart's action, but no general symptoms. (2.) Decided diminution of arterial tension, accelerated respiration and syncope. (3.) Little or no arterial current, irritation of the vaso-motor centres (spasms and convulsions), spontaneous evacuation of the urine and fæces, rarely deep respirations. (4.) No arterial tension, death of the brain and cessation of convulsions, respiration stopped, then the heart, this being always the last symptom.

Effect of Hæmorrhage into Serous Cavities. — The occurrence of a case of intra-thoracic hæmorrhage following an injury, where after fourteen days fluid blood was aspirated, which coagulated only after standing awhile, suggested to Penzoldt² the idea of attempting to determine experimentally the relation of the hæmorrhage into serous cavities to their walls.

From the prevalent theory of Brücke, that the influence of the normal living vessel-wall prevents the coagulation of the contained blood during life, and his statement that the walls of the lymph vessels present a similar relation, it seemed not unlikely that the blood should re-

¹ Gazette médicale de Paris, 1876, vi.; Centralblatt für Chirurgie, 1876, xlii.; Allgemeine medicinische Central-Zeitung, 1876, xc. 1104.

² Deutsches Archiv für klinische Medicin, 1876, xviii. 542.

main fluid in the case in question. The intimate relation between the serous membranes and the lymphatic system suggests that these membranes might hold a similar relation to the blood in contact with them to that which is the case with the walls of the lymph and blood vessels.

The experiments related not only to coagulation but also to absorption and inflammatory changes, and were made upon rabbits and a goat.

The result was that blood introduced into the thoracic cavity remained fluid for some time, a few hours only in the case of large amounts; somewhat larger when smaller quantities were present, though never more than twenty-four hours. In addition to the blood-clots a fluid resembling blood was present, which was either serum from the original hæmorrhage, and did not coagulate after evacuation, or, if coagulating, a secondary pleuritic effusion. The living healthy pleura thus delays coagulation.

Blood introduced into the peritoneal cavity remained fluid for some time, and either became absorbed in a few days, or remained larger and became coagulated. Blood within the pericardium clotted rapidly. The absorption of blood or serum appears to be quite slow in the rabbit's pleural cavity, but rapid in the abdomen.

In many cases pleurisy accompanied the hæmothorax, the more readily the greater the hæmorrhage. Little or no change took place in the peritoneal cavity in consequence of the hæmorrhage.

The practical bearing of these experiments upon the case alluded to is to be found in the probability that the bloody fluid aspirated was not blood but pleuritic effusion mixed with blood corpuscles from the extravasated blood. Blood clots were probably present within the pleural cavity, as fluid blood in such apparent quantity could not remain there for so long a time without coagulation. In deciding upon an operation for the removal of the abnormal pleural contents, supposing such to be thought advisable, it is evident that a simple puncture would produce but a partial effect.

(*To be concluded.*)

PROCEEDINGS OF NORFOLK DISTRICT MEDICAL SOCIETY.

ARTHUR H. NICHOLS, M. D., SECRETARY.

SPECIAL meeting, February 13, 1877, the president, DR. JOHN P. MAYNARD, in the chair. Present, fifty-four members. The society met in Roxbury, and was called to order at eleven A. M.

Local Boards of Health, and the Duties of the Medical Profession relating thereto. — DR. ROBERT AMORY read a paper with the above title. He observed that although physicians are commonly dependent for their means of support upon the existence of disease, their highest duty consists, nevertheless, in striving to procure the adoption and enforcement of prophylactic measures

designed to prevent or check disease. In accordance with this principle, members of the medical profession endeavor constantly, both publicly and in private, to educate public opinion to carry into effect sanitary and hygienic measures. By this means public opinion has of late years been educated to such an advanced point, that many important legislative enactments have been procured, some of which, if faithfully carried out, cannot fail to have an efficient prophylactic effect. Some of these enactments, quoted from the General and Revised Statutes of the Commonwealth, were shown to be of an extraordinary character, in that they require of physicians the gratuitous performance of important duties, and assign a severe penalty for their infringement. Other of these sanitary statutes are remarkable for the very extensive authority conferred by them upon local boards of health; an authority broader and stronger, it has been said, than that possessed by the justices of the supreme court. For example, it has been decided that an order of a board of health for the removal of a particular nuisance is valid without previous notice to the parties interested, and without allowing opportunity for them to obtain a hearing. Thus, the judges of a nuisance or of a cause of ill health are the identical officers whose duty it is to abate the nuisance. In other words, they are the executive of their own judicial functions, and in order to waive their decrees, the parties in interest must prove that no nuisance or cause of sickness exists.

In this State it is provided by statute law that every town must have a board of health. If the citizens fail to elect such a board, it is made the duty of the selectmen to act with all the authority which the law vests in a health board. Inasmuch, however, as persons serving on such a board should be qualified by education, and capable of bringing a well-trained intellect to bear upon the causes of disease and deciding upon the prophylactic measures best qualified to arrest its spread, it is obvious that the ordinary selectman will not constitute an efficient health officer. A board of health may delegate all its authority to an agent to act in an emergency when the body itself cannot be conveniently assembled, but this agent is required to report his action in each case within two days to those from whom he derives his authority. Although the law provides that all expenses incurred in the removal of nuisances shall be levied, and may form a lien, upon the property upon which the nuisance exists, yet it is extremely convenient, and even economical for the town to appropriate a sum of money to be used by the health officers. A small sum spent in the prompt removal of a cause of sickness or a nuisance may prevent the expenditure of a much larger amount at a later period. Any person maintaining a nuisance can be obliged to abate the same immediately, or as soon as may be possible. If he fails to comply with the order of the board, the health officers are empowered to carry out all necessary measures at the owner's expense. Furthermore, the board of health may, without previous notice, order any unhealthy residence to be immediately vacated and closed, and any persons entering these vacated premises may be fined a sum not exceeding fifty dollars. Again, the board may cause the owner of the property, who has failed to comply with its order to abate a nuisance, to be fined by the court for every day's delay which said owner knowingly permits such nuisance to remain after the time prescribed for the removal thereof. It must be borne

in mind, however, that all suits for fines under the health statutes must be brought by the town treasurer, since these fines inure to the benefit of the town.

It should be regarded by physicians as their bounden duty not only to support and obey the regulations instituted by boards of health, but also to take an active part in educating and influencing public opinion, that the spirit of such statutes may be sustained. On the other hand, the strongest coercive measures should be brought to bear upon medical men who may undertake to thwart health officers in the discharge of their legitimate duty. The State has manifestly the right to require physicians to notify the authorities of the existence of dangerous contagious diseases, and the failure to comply with any such just requirement, demanded by public necessity, should be visited by severe penalties; nor should any plausible protestations of disbelief in the theory of the communicability or transmissibility of specific poisons be accepted as an excuse or palliation for such a serious offense. Dr. Amory expressed the opinion that, in the interest of the public, measures should be adopted by boards of health to prevent physicians and nurses from attending patients sick with contagious diseases, when having charge of others who may be especially susceptible to the contagion of such diseases. No physician or nurse should be allowed, for instance, to attend a lying-in-woman after having been just previously exposed to a case of erysipelas. When a physician openly and defiantly refuses to report cases of small-pox or scarlet fever to a board of health, he not only runs the risk of defying the law and its officers, but also of sacrificing a broad vantage ground, which now belongs to the regular graduate in medicine. His bad example will be followed by others, and a warfare will begin, the result of which cannot fail to injure our profession, and interfere seriously with the welfare of the community.

Dr. Amory concluded his paper with an interesting account of what had been recently accomplished in Brookline in the way of sanitary reform. A board of health was chosen for the first time in the spring of 1876; since that time sixty-seven nuisances have been abated, and thirteen refractory citizens prosecuted. The board has also compiled and caused to be adopted, a set of by-laws, which were published under its authority, together with a digest of the health statutes. It has introduced an improved system of emptying and cleansing vaults and cesspools; has assumed control of the weekly removal of dirt and garbage; and more recently has ordered a surveillance of the registration of deaths.

DR. HENRY A. MARTIN remarked that in cases where physicians are called upon by the State to render services not absolutely demanded by urgent public necessity, it is but just that some fee should be returned in acknowledgment for such services. The lawyer very properly exacts a fee for the smallest duty rendered, and in all other professions and branches of business the State remunerates its laborers. The members of the medical profession alone occupy the anomalous position of performing important and valuable labor without receiving any corresponding return. He referred to the labor of signing vaccination and death certificates, a duty which, if conscientiously and thoroughly performed, is a matter of considerable trouble and annoyance to

the busy practitioner. Inasmuch as this is a matter of public benefit, rather than of necessity, provision should be made by state or municipal enactments for a nominal compensation for the labor.

The society voted to appoint a committee of three to investigate the question of the propriety of exacting fees in the case of certificates.

Uterine Supporters.—DR. CLIFTON E. WING presented a paper upon The Use of Uterine Supporters, in which it was maintained that a certain proportion only of uterine troubles can be benefited by the employment of pessaries, but that in cases requiring these instruments they can do nothing but harm unless perfectly fitted to the given vagina. Dr. Wing admitted that uterine trouble involving congestion and enlargement generally precedes the displacement of the womb, and is its chief cause. But it should be borne in mind that in certain cases the reverse is true; and the physician who holds steadfastly to the one view or the other must sometimes err.

The circulatory system of the uterus is adapted for supplying that organ with the proper amount of blood, when in its usual position, but it may be accepted as a rule that any change in the position of the womb from the normal one tends to interfere with the circulation, and usually the greater the displacement the more the congestion. Congestion of an organ as richly supplied with blood vessels as is the womb involves a material increase in its weight, which of course tends to perpetuate and increase the displacement.

Certain varieties of uterine displacement take place suddenly, as the result of violence, such as the strain from lifting a heavy weight, or a fall; the natural result of such displacement is congestion, œdema, and increased sensibility, and, with the congestion of the mucous membrane, an abundant secretion of mucus. If, under such circumstances, the displaced part be restored to its normal position and retained there by means of a pessary until the natural supports regain their tone, it is reasonable to suppose that the congestion and sensibility will rapidly diminish, the organ decrease in size, the uterine discharge cease, constipation, painful defecation, and trouble with the bladder disappear, dysmenorrhœa, due to the congested, hyperæsthetic state of the womb, or perhaps to obstruction caused by a flexion, give place to perfectly painless menstruation, and that recovery will take place without additional treatment. In the case of uterine displacement in any direction, the opposing ligaments and tissues are overcome and kept extended as long as the displacement continues, and our main hope of cure in such a case must lie in restoring the womb to its place before its proper supports become permanently overstrained, and in retaining it in position until they regain their tone. The indications for treatment are here often met by a well-fitting supporter, though in other instances, owing to the condition of the parts, other measures, perhaps operative, are necessary before the womb can be restored to its normal position and retained there by the pessary. Dr. Wing denounced the employment of the elastic ring and globe pessaries, and also of those made of soft rubber and dilated within the vagina, asserting that they tend to leave the pelvic supports weaker than before they were used. He spoke of the tendency at the present day to undervalue the influence of the vagina in supporting the womb, and in keeping it in place, maintaining that the walls of the vagina,

when in apposition and of normal tone, and supported by the surrounding tissues, must act as a strong column of support to the womb. Soft rubber, moreover, absorbs more or less of the secretions, and becomes in a short time very foul and irritating, giving rise often to excessive leucorrhœa. The softest inflated pessary may cause an astonishing amount of ulceration in a very short time. The supporters which have a stem attached to a belt, or other contrivance on the outside of the body, were characterized as probably the worst of all, being incapable of adapting themselves to the mobility of the womb, and tending to stretch the vagina and distort the parts. Of all the materials which have as yet been brought into use, hard rubber is by far the best, and the various modifications of the closed lever pessary of Hodge, made of this substance, will be found to supplant the other varieties of pessaries in proportion to the experience of the physician in their application. But the secret of success with pessaries lies not so much in the kind which is employed, for a variety which is proper for a given case may be improper for the next, but in accurately fitting the pessary to the patient.

DR. E. D. MILLER thought that in the great majority of cases it was advisable to direct the treatment towards the local inflammation rather than the malposition, which latter lesion did not necessarily involve any unpleasant symptoms. If the uterine ligaments were relaxed, the fundus, being the heaviest part of the organ, would inevitably bend over; but he had known many women to go about with the greatest possible displacement, and yet without any inconvenience. If any part of the uterus or vagina with which the pessary comes in contact is sensitive to pressure, this constitutes a contra-indication to the employment of the pessary. It would be as reasonable to apply pressure to a boil.

DR. WING replied that tenderness of the uterus alone constituted no contra-indication to the use of a pessary, for a proper uterine support should not come in contact with the uterus. In reply to questions, he stated that in cases of retroversion with adhesions, such for instance as result from parametritis, relief would generally be afforded by gradually distending and breaking up the adhesions, and then restoring the organ to its normal position where it should be retained for several months by means of a well-fitting pessary, at the end of which time the relaxed ligaments would probably have shortened, and the organ would remain in position without further artificial support.

Pessary imbedded in the Vagina; Removal. — Dr. Miller displayed a hard rubber pessary removed the day previous from the vagina of a woman aged seventy-six years, which had been inserted about two years previous on account of procidentia uteri. It was found, upon examination, that firm fibrous membranes had formed within the vagina, such as are not unfrequently seen in old women, and these blocked up the passage so as to render the withdrawal of the pessary impossible, and it could be removed only after a portion of the instrument had been cut away. A large calculous deposit had formed around the pessary at the point where it came in contact with the meatus urinarii. Dr. Miller said that he had removed a pessary under similar circumstances two years previous.

School Hygiene. — DR. JAMES WALDOCK read an exhaustive paper upon

this subject, beginning with the assertion that in this and in all other civilized countries occupying the cooler portion of the temperate zones, the artificial conditions of life passed in dwelling-houses, workshops, and particularly in schools, tend to produce various bodily deformities, serious illnesses, and an unnecessary destruction of life. He showed that the cases of untimely death occurring in this country among children, resulting from the insanitary conditions of the school-room, amount annually to many thousands, and that the aggregate of other cases of preventable disease not terminating in speedy death, but in the permanent disability or deformity of some portion of the body, or in the loss of some functional force, would be represented by a very much larger figure. He next proceeded to specify some of the chief sources of danger to health existing in the public schools, embraced under the following heads:—

I. Ill-located school-rooms. II. Ill-heated school-rooms. III. Ill-ventilated school-rooms. IV. Infected school-rooms. V. Dark or ill-lighted school-rooms. VI. Ill-furnished school-rooms. VII. Immoral or demoralizing school-rooms. VIII. Hyper-hygienic school-rooms.

KEYES ON THE TONIC TREATMENT OF SYPHILIS.¹

FEW diseases are more thoroughly controllable by therapeutical agencies than syphilis. "The prognosis in the most desperate conditions," says Dr. Keyes, "is always infinitely better where syphilis can be made out as having caused the trouble than where any other diseased condition is at fault." So powerful is the curative action exerted by mercury and by iodide of potassium upon syphilitic patients as fully to justify this statement of Dr. Keyes. At the same time it must be admitted that mercury, when misapplied, is equally powerful for harm. It is therefore eminently desirable that we should know how to conduct the treatment of syphilis by mercury so as to obtain the full benefit of the drug without incurring any of the disadvantageous effects which have brought this valuable agent into disrepute in so many quarters.

The chief object of Dr. Keyes's publication is to show that mercury in *suitable doses* exerts a true tonic action. The method of demonstration here used is the numeration of red blood corpuscles in patients under mercurial treatment. "Mercury," says our author, "has long been considered as an alterative. . . . To me the word alterative was always objectionable, because I could not understand it. I believed mercury to be beneficial in minute doses, but it was only while counting with the *hématicmètre* the recells in the blood of individuals, healthy and syphilitic, who were taking minuted doses of mercury, that I appreciated its real import; alterative, when applied to small doses of mercury, means tonic, and tonic means an increase in the number of red blood cells." This method of investigation had already been applied by Willbouchewitch. He found that a short period of augmentation in the number of red corpuscles was soon followed by a phase of rapidly pro-

¹ *The Tonic Treatment of Syphilis.* By E. L. KEYES, A. M., M. D. New York: D. Appleton & Co. Pp. 83.

gressing anemia, which ceased only when the mercurial drug was withdrawn. Hence his precept to administer mercury in repeated interrupted courses. Dr. Keyes shows, however, that Wilbouchewitch overdosed his patients with mercury, thereby causing diarrhoea and loss of weight, and that his results and conclusions do not accord with the phenomena observed by Dr. Keyes himself in patients undergoing treatment by continued small doses of mercury.

Dr. Keyes's blood-counting observations show that mercury decreases the number of the red cells when given in excess, especially in hospitals; that syphilis diminishes the number of red corpuscles below the healthy standard; that mercury in small doses continued for a short or long period in syphilis alone or with the iodide of potassium, increases the number of red corpuscles in the blood, and maintains a high standard of the same; that mercury in small doses acts as a tonic upon healthy animals, increasing their weight, while in larger doses it is debilitating or fatal; and that mercury in small doses is a tonic (for a time at least, as long as the experiments lasted) to individuals in fair health, not syphilitic.

The results of the blood-counting observations and experiments are exhibited in Chapter I. These valuable and interesting contributions to physiological therapeutics may perhaps bring Dr. Keyes's work somewhat into discredit among the more determined devotees of pure empiricism, to whom, by the way, it must be a little displeasing to see the "alterative" action of mercury explained. We therefore hasten to add that Chapters II. and III. are devoted to the clinical and practical aspects of the treatment of syphilis in all the phases and forms of the disease. Here experimental and theoretical considerations give way to the results of accurate and careful observation and of ripe clinical experience, which are set forth clearly and succinctly. Judging from the standpoint of the practical interests of the physician, we know of no better exposition of the rules which should govern the treatment of syphilis than is contained in this little volume.

T. B. C.

GARNIER'S DICTIONNAIRE ANNUEL.¹

THE twelfth volume of this valuable work has been received, and, as in former years, its contents are such as its title describes them to be, an annual record of the progress of medical sciences and institutions. The reader may here find under its appropriate title a faithful abstract of what has been published by the medical profession during the past year, not in France alone, but in every country. Inspection will not fail to convince the examiner that we have in this work one of the handiest and most valuable of manuals.

In his introduction the author calls attention to the interest which has been manifested during the past year in the subject of medical education, both in France and elsewhere.

The question of cerebral localizations has occupied the minds of many investigators, and to the results of experimentation, heretofore negative or contradictory, there have succeeded clinical and anatomic-pathological facts of an

¹ *Dictionnaire Annuel des Progrès des Sciences et Institutions Médicales.* Par M. P. GARNIER, M. D., etc., etc. Twelfth Year. Paris: G. Baillière & Cie. 1877. 12mo, pp. 53.

affirmative character, and sufficient in number to confirm the doctrine of these localizations.

Among the new therapeutic agents salicylic acid attracts most attention. The author gives to the physicians of the United States the credit of making the most numerous and careful observations regarding its value in rheumatism; but in consideration that so many drugs have been vaunted as specifics in this disease, he thinks we should be careful about placing too much confidence in the newest.

The favorable influence of sea-air and baths upon scrofulous coxalgia, and the reported success of bismuth in the treatment of intestinal hæmorrhages in typhoid fever, of the bromide of potassium in facial neuralgia, and of eucalyptus and chloral in cancer are mentioned.

Following the introduction and arranged in alphabetical order are the abstracts of which the dictionary is composed. Frequent mention is made of articles which have appeared in American medical periodicals, and we meet with many names, and with favorable mention, of the contributors to the JOURNAL.

A MEDICAL INSPECTOR OF SCHOOLS.

THE last meeting of the Boston School Committee was the occasion of an animated debate on the propriety of establishing the above office. The proposition had already been referred to a committee, who had reported unfavorably. Dr. John G. Blake opened the proceedings by offering a substitute order to appoint a medical and sanitary inspector of the public schools, and argued in its favor at some length. He read a petition signed by Dr. Bowditch, Dr. Williams, Dr. Cheever, and other leading physicians, a letter from Dr. E. H. Clarke, and a communication from the Board of Health, all in favor of such an appointment. Our space will not permit us to reproduce at length the able arguments which were presented, but we must give an extract from Dr. Clarke's letter, which contains the pith of the matter:—

"It is scarcely credible that at the present time, and in the city of Boston, it is necessary to insist upon the influence of physical over intellectual development, or to point out the necessity of attention to the health of scholars of both sexes, as a means of securing their best intellectual and moral advancement; yet I fear the community give only a superficial assent to such a statement, without entertaining an absolute conviction of its truth, or possessing an earnest determination that the health of our youth shall be sustained and improved, as far as possible, at all hazards and at any necessary cost. If the school committee really believed it they would not hesitate about appointing a competent officer charged with the duty of supervising our schools, so that they shall not train their pupils into the ways or expose them to the danger of disease. The intellectual and moral development of puny and feeble children is sure to be as puny and feeble as that of their bodies. Physical and mental soundness and physical and mental unsoundness go together. The instances which now and then occur of great mental force and attainment in young persons who are the victims of ill health and deformity belong to the class of exceptions which prove the rule."

Dr. Blake then explained to the committee the importance and great breadth of the question. "The possibility," said he, "of evils existing which affect more or less directly the physical well-being of twelve hundred teachers and fifty-six thousand pupils in our schools must be of weight and moment in the processes of mental improvement and moral health. Preventive measures against the introduction and spread of contagious disease, though there may be the most apparent want in this respect, are not by any means more indispensable than many other obscure evils which are thrust upon our notice from day to day. Grave defects of heating and ventilation, improper forms of school furniture, lack of proper hygienic considerations in the selection of school sites and construction of school-houses, and insidious dangers to the sight and hearing of pupils may not produce the sudden change from health to disease which is caused by the introduction of an epidemic or the propagation of contagion, but they none the less surely sap the springs of health in body and mind, while in the end they become as fatally pernicious as their more dreaded associates. Besides, we cannot draw a line in these matters. Given imperfect conditions to begin with, and we are at the mercy of a thousand forms of danger which under more favorable circumstances would be harmless or unimportant."

He then referred to the report of the committee, in which the importance of the question was admitted, but which claimed that the present rules which require superintendent, supervisors, and teachers to interest themselves in all that pertains to the physical condition of those under their charge met the want and supplied the deficiency. This, Dr. Blake argued, was not the case. "What right have we to expect from instructors and arbiters of educational principles the intimate and thorough knowledge of health laws, regulations, and abuses, without which any interference in these matters is simply a matter of form or pretense? What is there in the ordinary culture of the student or man of letters—even in his extraordinary culture, if you so desire it—to make him an expert in matters entirely outside his courses of study? We would scarcely require of our supervisors or teachers that they should be able to prescribe for a case of scarlet fever or set a broken limb; we do not demand of our superintendent that he should be a practical engineer or a professor of chemistry; but neither of these cases is more abstruse nor requires a more special education to grapple with than any one of fifty questions which may enter into a proper regard for the laws of health in schools at different times through the year. With the best will in the world on the part of our present board in all its departments, with the most earnest and enlightened desire to do their whole and full duty, I contend that there is no law of right or principle of logic by which we should expect the work of a sanitary expert from any other than a specially qualified medical man."

These were the chief branches of Dr. Blake's speech. He brought much collateral matter in support of his views, and concluded by hoping that the committee would not allow itself to be deterred by the slight additional expense.

Dr. Ezra Palmer, of the sub-committee that had condemned the plan, replied to Dr. Blake, and made if not a good at least a remarkable speech. He consid-

ered the proposed office unnecessary. Diseases, he said, did not arise at school, but in the homes of many of the children. We are not aware that any one has disputed this fact, nor that it has any bearing on the question, for a disease acquired in one place may be communicated in another. Dr. Palmer, however, did not limit himself to truisms, but made the surprising statement that scarlet fever is but slightly if at all contagious, and arises from defective sewerage and kindred evils. We do not know what grounds Dr. Palmer may have for this view, which is totally opposed to those of the leading physicians of the civilized world, but they must be strong ones to justify him in positively enunciating a theory which, if erroneous, must lead to deplorable consequences.

Dr. H. P. Bowditch thought it unnecessary to take up time with a medical discussion on contagion; so merely stating that Dr. Palmer's ideas were contrary to those of the vast majority of physicians, he presented the province of the medical examiner in a new light, as will be seen by the following extract from his remarks:—

"We have given abundant evidence of our belief that complete education must combine both mental and bodily training. Our regulations are full of statements of this sort. Even the committee which reported adversely upon the measure under consideration emphasized this fact in the most decided way. Although mental and physical training are thus recognized as two parts of one harmonious whole, the means which have been adopted for testing the efficacy of the methods in use are very different in the two cases. While the results of mental training are tested periodically with great care by a board of paid officials, no pains are taken to determine the result of our efforts at improving the physique. We provide for a certain amount of physical exercise, for military drill, etc., measures which we regard as conducive to a good development of the physique, but we have adopted no plans for determining whether the physical condition of the pupils is really improving under our methods. For this purpose periodical investigations and reports on the sanitary condition of the pupils in the various schools should be made."

Dr. J. B. Moran made an excellent speech of a pacific and conciliating tone, in which he declared that all of the committee desired to advance the good of the pupils and differed only in the means. "The question," he continued, "which suggests itself is this: 'Have we fully attended to this duty or not?' Other members say we have; the committee on rules and regulations say we have, as far as it is possible and advisable. But on this first point I beg to differ with them. I believe we have not. And since we have not, and there exists such an obligation upon us, and as the means proposed seem to be the best within our power, I feel it my duty to support and advocate the order before us.

"What is it to us that other cities or other countries have not taken this step? We did not consult them in founding our present school system and establishing our board of supervisors. Why should we wait for some other government to take the initiative? We are the custodians in a very great measure of the health and the lives of fifty thousand children. There is a moral obligation here which we cannot shirk. It is not sufficient that we do *something*; it is not enough that we do *much* to protect the health of these children. We are bound in duty to our own convictions on the one hand, and on the

other to the citizens of Boston, whose servants we are, to do *all* and *every-thing* that can be done in reason and justice for the preservation of the good health and physical perfection of the pupils, and the prevention of disease amongst them. Now, Mr. President, I ask, have we fully complied with this obligation, this public necessity? I answer, we have not, and never shall have, until we appoint a man competent to fill such a position as is advised, whom we can hold responsible for the performance of such duties as the proposed office implies. What we require is an officer, in a word, a physician, a student of health and life and sanitary laws, and when we have such an officer, then, and not till then, do I consider that we shall have done our whole duty."

The point having been raised that the school committee has not the power to create such an office, the question was dropped till the opinion of the city solicitor should have been obtained. We do not know what the legal aspect of the case may be, but if it should appear that such an office cannot be made, we trust the law will be changed so as to allow it, for we believe that if a proper appointment is made, much good may come from it. We hope that in either case the duties of the inspector will be clearly defined, and that great care will be exercised in selecting a candidate for the office.

BOSTON CITY HOSPITAL.

MEDICAL CASES OF DR. G. H. LYMAN.

Chorea in Pregnancy.—CASE I. B. L., single, aged thirty, entered the hospital October 31, 1876. Catamenia began at fourteen, and had since continued regular. Had suffered from nausea for two weeks with sensation of burning at epigastrium. The patient was extremely nervous, had twitchings of the muscles, and started convulsively at the slightest sound, and when suddenly touched screamed violently. She was ordered a laxative, to be followed by asafetida and valerianate of ammonia.

November 12th. Her symptoms remaining unchanged, a more careful inquiry revealed the fact that she had been exposed to conception early in September, and that contrary to her original statement she had not since menstruated. On vaginal examination the uterus was found full and hard as if about two months pregnant. No lividity of vaginal walls or enlargement of breasts. Morning nausea constant. She had evidently entered with the hope that by deception she would get some treatment to relieve her of the pregnancy.

CASE II. E. S., single, aged eighteen, was also admitted October 31st, suffering from involuntary convulsive movements, which she said had troubled her for three weeks. These were most marked on the left side, and at times were so severe as to prevent her from articulating distinctly, or from feeding herself. She said that two years ago she had had a similar affection. Upon examination she also was discovered to be pregnant.

These two cases are reported as instances not very common of the nervous derangements incident to the early stages of pregnancy. They are more generally found in young unmarried women, induced probably by mental distress and anxiety in view of impending disgrace. As these symptoms usually persist

in spite of treatment until delivery takes place, they were both discharged to await their confinement elsewhere.

Chronic Endometritis and Metrorrhagia relieved by Full Dilatation of Cervix.—L. S. W., aged twenty-seven, married; catamenia at sixteen, always irregular; attributes her troubles to scarlet fever, which she had nine years ago, and which was followed by anasarca and general debility. A year since she had pain in the lower part of the abdomen, most severe on the left side, extending down the leg to the ankles. Has now constant lumbar pain. For eight months has not been free from metrorrhagia with the exception of two weeks in June, and the ten days previous to admission. Has always suffered from leucorrhœa; married sixteen months ago, but was divorced at the end of three months. Never pregnant. Complains of facial neuralgia, headache, insomnia, obstinate constipation, and dysuria.

October 15th. Upon examination the uterus was found to be enlarged, the sound entering easily three and one half inches. The cervix was red, congested, and the os somewhat patulous. Nitric acid was applied to the cervical canal, and she was ordered large vaginal douches as hot as could be borne, and laxatives.

October 29th. Much improved. Cervix freely scarified, followed by glycérine tampon. The same general treatment was pursued at intervals of a week or ten days with marked relief to the leucorrhœa, pains, and uterine congestion. The metrorrhagia not ceasing, a month later (December 28th), the cervix was largely dilated by laminaria tents and the cavity thoroughly swept with curette forceps, bringing away only some small shreds of hypertrophied mucous membrane. This was followed immediately by tincture of iodine swabbed over the whole uterine surface.

January 7th. Hemorrhage has ceased almost entirely since the dilatation. The sound now enters but two and five eighths inches. There being a slight show occasionally, the cervix was again thoroughly dilated by tents.

January 12th. No hemorrhage. Cervix natural, discharging for the first time a healthy transparent mucus. Patient was directed to take iron, and was discharged.

Hæmorrhage from Abortion.—A. H., aged thirty-six, widow, admitted December 9th, was attacked suddenly in the street the evening before with profuse uterine hæmorrhage. Confesses that she was exposed to pregnancy four months previously. Assisted to the hospital by the police, her clothing saturated with blood, and still flowing profusely. Ergot and stimulants given by the house physician during the night were rejected. The fundus uteri was found above the brim of the pelvis, the os dilated and soft, and the membranes protruding. The vagina was immediately tamponed and ergot was given subcutaneously.

December 10th. At morning visit the tampon was withdrawn, and the placental mass, still partially adherent, was removed by forceps. There was no trace of the fœtus, which had designedly or otherwise been lost the day before. After ergot and stimulants for a few days she was discharged well.

Hæmorrhage from Fibroid.—M. K., aged forty-eight, married, with eleven children, was admitted October 17, 1876. Has always been well and regular

until a miscarriage occurred twelve months since. This was accompanied with considerable hæmorrhage. Since that time the catamenia have recurred profusely every two weeks. A week before admission the hæmorrhage was so abundant as to induce syncope, and the flowing still continues, sometimes more, sometimes less. Vaginal examination revealed a fibroid about the size of a hen's egg, attached by a distinct pedicle within the cervix near the internal os. This being drawn down and removed the hæmorrhage ceased immediately, and not recurring for a week the patient was discharged well.

FLUID WEIGHTS IN PRESCRIPTIONS.

Messrs. Editors, — The JOURNAL of March 8th contains a communication signed E. T. R., in which the continuance of the practice of dispensing liquids by measure is advocated. Permit me as one of the few who as yet have publicly taken the opposite view briefly to lay the arguments of the other side before your readers.

The reasons assigned by E. T. R. for his side are (1) "much greater convenience for all parties concerned," and (2) "accuracy entirely sufficient for all practical purposes." I agree with the second proposition, because all doses of medicines are at best only approximations to the quantities actually required; but the fact that one has done well is no reason why he should not do better, and I am pleased to notice that E. T. R. indirectly concedes the greater accuracy of the other way.

In regard to the first reason, it will be granted that the "parties concerned" are the patient, the pharmacist, and the physician, to the first of whom it does not make the slightest difference how the liquids are dispensed, because he will have to continue to take mixtures by the conventional teaspoon or some other convenient measure. The pharmacist, however, will encounter some inconvenience if the proposed change is made; he will have to unlearn some of his accustomed practices, and become proficient in others to which he is not accustomed, but after that has been accomplished, we believe that he would not like to change back again to the present method, even if he were permitted to do so.

The physician is in a precisely similar position to that of the pharmacist, only that in the case of the latter, methods of manipulation are the main difficulty, while with the former the apportionment of doses is the chief or rather the *sole* obstacle to be overcome. Neither the one nor the other will exist for those who may join either profession after the change shall have been adopted; for it will be just as easy, and I think easier, for the physician to remember the doses of tinctures, syrups, etc., by weight, because they will have been made in fixed proportions by weight only. However, the opposition to the proposed change arises perhaps mostly from the mistaken notion that physicians could not estimate the volume of a liquid medicine prescribed by weight. On reflection it will be granted that, practically, but two classes of liquids deserve consideration as general vehicles forming the bulk of the mixtures usually prescribed, namely, waters and syrups, and their relation to

each other as to weight is so well known to every intelligent person that the physician will have no trouble in using it for his purposes with greater mathematical precision, remembering merely that the one class is one third heavier than the other. The specific gravity of tinctures made with diluted alcohol, which constitute sometimes the principal volume of liquid medicines, is so near that of water as to be practically the same, and liquids which vary materially from the specific gravities of the two classes mentioned above are never prescribed as ingredients of mixtures in such quantities as materially to influence their bulk beyond what would be produced by the same weight of water or syrup. On reflection, I think E. T. R. will grant that he urges merely personal and temporary inconvenience as an argument against the proposed change, which I freely admit.

The above considerations, however, point to the greater exactness and convenience of weights over measures in the prescribing and dispensing of liquids after both physicians and pharmacists shall have accustomed themselves to the change. For the wholesale drug and chemical trade this has long since been recognized, and has even, to some extent, been admitted by our national Pharmacopœia in the last two editions. If correct for one half the liquids, why not for all? But there is another point which is generally overlooked by the opponents to the proposed change, namely, the fact that all civilized nations except those speaking the English tongue prescribe and dispense all medicinal substances by weight alone, and that by adopting the same course the scientific intercourse between the different nations will be greatly facilitated.

In the *American Journal of Pharmacy* for February I have discussed these points at some length, and have also shown that the physician may gradually accustom himself to the change, either by using the tables there given in converting the measures of different liquids into their corresponding metric weights, or by directing the apothecary to dispense them by this weight after converting the weights and measures now in use into grammes.

Mr. Alfred B. Taylor, in the *Philadelphia Medical and Surgical Reporter*, February 24th, in a paper bearing the title of this communication, proves likewise the greater convenience and accuracy in prescribing and dispensing liquids by weight; but he suggests that the mixture be made up to a desired bulk by adding a sufficient quantity of the vehicle or adjuvant. The plan will answer very well as a compromise for those physicians who from long habit have become so wedded to measures that they cannot discern the simplicity of apportioning by weight alone the doses of such medicines as have to be taken by the spoonful.

For those who are acquainted with the subject, no argument is needed to prove that the reasons for preferring in many cases volumetric to gravimetric analysis do not apply to the dispensing of medicines.

Very respectfully yours,

JOHN M. MAISCH.

PHILADELPHIA, March 17, 1877.]

COMPARATIVE MORTALITY-RATES FOR THE WEEK ENDING MARCH 24, 1877.

	Estimated Population, July 1, 1877.	Total Mortality for the Week.	Annual Death-Rate per 1000 for the Week.	Death-Rate for the Year 1876.
New York	1,077,228			27.46
Philadelphia	850,856	351	21.45	22.88
Brooklyn	527,880	221	21.77	24.31
Chicago	420,000	154	19.05	20.41
Boston	363,940	145	20.72	23.39
Providence	103,000	31	15.65	18.34
Worcester	52,977	16	15.71	22.00
Lowell	53,678	24	23.25	22.21
Cambridge	51,572	18	18.15	20.54
Fall River	50,370	19	19.61	22.04
Lawrence	37,626			23.32
Lynn	34,524	10	15.06	21.37
Springfield	32,976	8	12.62	19.69
Salem	26,739	6	11.67	23.57

ERRATUM. — In the last number of the JOURNAL, the signature of the author of the description of Dr. Snellen's phakometer, Dr. Haaket Derby, was omitted by mistake.

NORFOLK DISTRICT MEDICAL SOCIETY. — A special meeting will be held in Bradley's Building, corner of Dudley and Warren streets, Roxbury, on Tuesday, April 10th, at eleven o'clock. Papers, communications, etc. : —

1. Recent Improvement in Pharmacy, with Specimens. Prof. G. F. H. Markoe.

2. Report of Committee upon the Subject of Physicians' Fees in Cases of Death Certificates, etc.

3. Criminal Accountability of the Insane. Dr. Edward Mead.

Exhibition of Recently Invented Instruments, Apparatus, etc.

4. New Flexible Splint for Knee-Joint. Dr. W. P. Bolles.

5. New Apparatus for the Administration of the Vaginal Douche. Dr. J. Stedman.

6. New Metallic Probe for Fistulae. Dr. H. A. Martin.

7. Portable Disinfecting Apparatus. Dr. T. Garceau.

8. Newly Invented Surgical Apparatus. Dr. W. C. B. Fifield.

Members of other district Societies are cordially invited to be present.

Lunch at 1.45 P. M.

ARTHUR H. NICHOLS, Secretary.

BOOKS AND PAMPHLETS RECEIVED. — Proceedings of the Medical Society of the County of Kings, Brooklyn, N. Y. April, 1877.

General Index to the New York Medical Journal from April, 1865, to June, 1876. New York: D. Appleton & Co. (From A. Williams & Co.)

The Medical Science and Profession. Commencement Address by the Rev. N. West, D. D., before the Miami Medical College, Cincinnati. 1877.